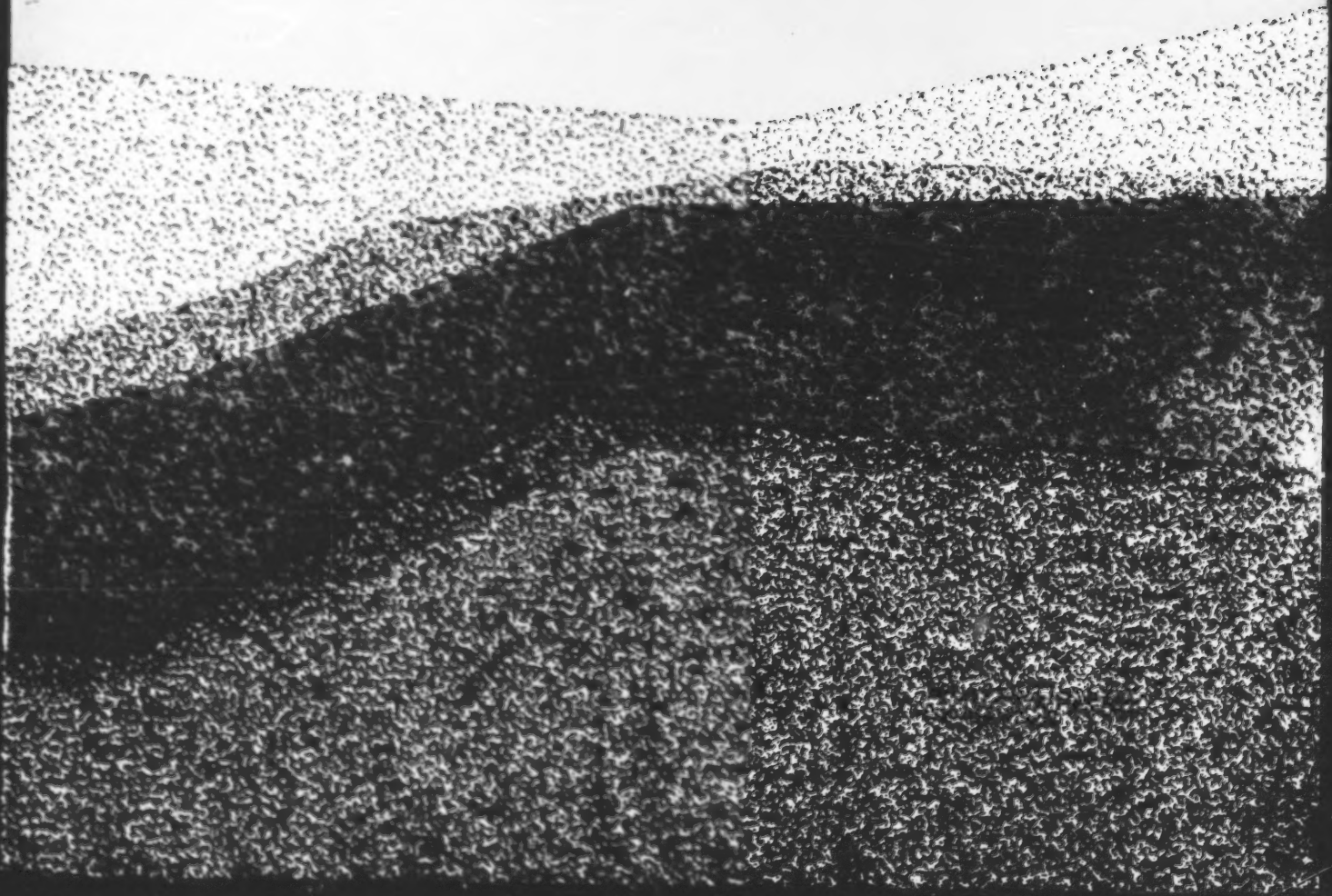
Centre for
Resource Studies

Queen's University
Kingston, Ontario

Centre for Resource Studies

Annual Report

1984-85



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Centre for
Resource Studies

Queen's University
Kingston, Ontario

Annual Report for the Period 1 May 1984 — 30 April 1985

Centre for Resource Studies

Origins and Objectives

The Centre is a cooperative research institute established at Queen's University in 1973. Funded by The Mining Association of Canada and the federal Department of Energy, Mines and Resources, and co-sponsored by Queen's University, its function is to improve understanding of the complex questions underlying issues of mineral resource policy (excluding oil and gas). The purposes of the Centre are accomplished through a program of research and publication, and by providing opportunities for discussion and liaison between representatives of federal and provincial governments, the industry, labour, universities and other interested groups.

Summary of Activities 1975-85

In 1975, a multi-disciplinary research program was launched on the national impact of mining, to study the effects of the mining industry on the economy and on other aspects of Canadian society. This program was completed in 1978. Late in 1976 a second major research thrust was undertaken, with the objective of examining the mineral-related policies and programs of the federal and provincial jurisdictions in Canada. Studies arising from both programs have been published as monographs and working papers, the first appearing in 1976. As of April 1985, sixteen monographs and thirty-three working papers have been published on these and other topics. In 1981 a new series of publications entitled Technical Papers was introduced, and three in this series has been published so far. In addition, twenty-one issues of CRS *Perspectives* have been distributed to our mailing list which now has approximately 4,500 names.

Over the current year, CRS staff and associates began eight new projects and continued work in other areas. Outside researchers initiated four new studies and continued with three from previous years.

In 1977 the Centre held the first of a series of CRS Policy Discussion Seminars. Each seminar brings together, in a constructive working environment, invited representatives of a diversity of interests to discuss a topic of current policy concern. Each gives rise to a set of proceedings which contains the text of papers presented at the seminar, as well as a digest of discussions. Fourteen seminars have been held up to April 1985.

The Centre has continued its activities in contract research, carrying out projects for the federal and provincial governments. The federal government has funded a sourcebook of mineral industry information for native people who wish to participate in mineral-related activities. Two studies have been funded under the Canada/Nova Scotia Mineral Development Agreement: one investigates the potential for secondary processing of N.S. gypsum in that province; the other examines locational factors which influence the economics of mining, hence providing an improved basis for exploration planning within the province.

Further details of CRS activities may be found in later sections of this report. The Executive Director and Board of Directors wish to acknowledge the contribution of CRS staff, associates and committee members. Without their strenuous efforts and generous allocation of time, the accomplishments of the past year would not have been possible.

1984-85 Activities of the Centre

The major event for the Centre for Resource Studies in 1984-85 was the arrival in September 1984 of Dr. David L. Anderson, to take up the position of Executive Director of the Centre. Dr. Anderson is an economist with a broad range of experience in government policy and mineral-related economic studies. Prior to his arrival at CRS he was a professor in the Faculty of Administration at the University of Regina. In addition to his management and communications responsibilities, Dr. Anderson will be pursuing research in several areas, including the international competitive position of Canadian coal producers in Pacific Rim markets, and the impact of mining and other resource sectors on the Canadian economy.

Dr. Brian Mackenzie stepped down as Interim Executive Director, and returned with considerable satisfaction to full-time teaching and research as a Senior Research Associate at CRS and Professor in the Department of Geological Sciences. He will continue his long-term interest in his data base on Canadian mineral deposits, expanding and updating the base and using it for such studies as mining productivity, exploration economics, and mineral supply potential in Canada's north.

1984-85 also saw the initiation of the CRS Distinguished Visitor Program, which will bring senior figures from academia, industry, or government to the Centre for short-term appointments involving at least one research project, as well as consulting with CRS researchers and representing the Centre at various meetings and gatherings. The Centre is fortunate to have as its first Distinguished Visitor Mr. W. Keith Buck, who has played an influential role in the field of Canadian mineral economics and mineral policy, and who recently retired as Secretary General of the Lead/Zinc Study Group based in London. Mr. Buck took up his duties in February 1985.

The long-term research interests of the Centre continued to receive attention over the year. In addition to Dr. Mackenzie's deposit data base, for example, studies continued on the development of mineral policy in Canada (Dr. David Yudelman) and on actual initiatives resulting over the year from the policy process (Margot Wojciechowski).

Medium- and short-term research in response to economic and policy forces focused over the year on the international competitive position of the Canadian mineral industry. Specific projects in this area include David Anderson's coal studies, and David Haglund's study of the implication of U.S. mineral policy for Canadian mineral markets. New proposals were approved for studies of mineral supply and demand issues in Korea and in the Soviet Union, and the economic contribution of mine infrastructure to development in Australia.

Other short-term responses to current issues included the CRS seminar on mining taxation; Dr. Yudelman's investigation of mineral issues arising in and from the Macdonald Royal Commission hearings, studies and reports; and the sourcebook to assist native people interested in becoming involved in mineral-related activities.

Dr. Yudelman took a two-month leave of absence early in 1984 to pursue his studies of the South African mining industry, with funding from the Social Sciences and Humanities Research Council. Furthering the South African connection, the Centre was pleased to host Michael Martinson, Department of Mining Engineering, University of Witwatersrand, S.A. Mr. Martinson spent May 1984 at the Centre researching his study of Statutory Enquiries into Occupational Hazards in Ontario Mines.

In addition to its program of formal research, seminars, and publication, CRS also provides ongoing advice and commentary through its newsletter, *CRS Perspectives*, presentations, and the media.

Research and Publications

Research Completed since May 1984

Mineral Policy Update 1984: Margot Wojciechowski, Centre for Resource Studies. This report presents a catalogue of annual mineral policy and program changes and highlights in Canada. Innovations and policy changes, rather than ongoing programs, are emphasized and areas of concern are identified. Jurisdictions covered include the federal government, the Territories, and all provinces except Prince Edward Island. There is a common base of information for all jurisdictions, covering topics such as budget changes and new legislation. In addition, specific events and policy directions are considered within each jurisdiction.

Canadian Mineral Policy Formulation: A Case Study in the Adversarial Process, David Yudelman, Centre for Resource Studies. This study examines EMR's *Mineral Policy: A Discussion Paper* and the mining industry's reaction to it. The objective is to provide a study of use both to those concerned primarily with Canadian mining and to those interested in Canadian policy formulation. Published in June 1984.

The Politics of Environmental Regulation: The Case of Acid Rain in Ontario: Edwin Black and Gail Wood, Department of Political Studies, Queen's University. This study looks at the present extent of environmental regulation of acid rain by the Government of Ontario. It provides a more complete understanding of the phenomenon of 'acid rain', of attitudes toward its regulation, and of the present extent of its regulation, along with an explanation of the current policy situation and the limits of change.

Economic Comparison of Base Metal Exploration in Australia and Canada: Brian Mackenzie, Centre for Resource Studies, and Roy Woodall, Western Mining Corporation. This study compares the economics of base metal exploration in Australia during the period 1955-78 with similar assessments made in Canada for the 1946-77 period. The comparison is based on documented historical experience, evaluated in the context of current economic outlook conditions. Mineral exploration economics is measured by the relationship between real exploration expenditures, and the value of economic deposits discovered as the result of that exploration. A paper focusing on the productivity aspect of the topic was presented at a meeting on the economics of mineral exploration, convened by the International Institute for Applied Systems Analysis, Laxenburg, Austria, in December 1983.

Mineral Policy in Canada: Genesis and Analysis: David Yudelman, Centre for Resource Studies. This study looks at the formulation of federal mineral policy in Canada historically and in the present. It examines to what extent the past provides lessons for the present and to what extent the problems of the present are unique. It will be published in mid-1985 under the title *Canadian Mineral Policy, Past and Present: The Ambiguous Legacy*.

Geological Factors Affecting Mining Productivity: The Case of Canada's Base Metal Resources: Brian W. Mackenzie, Centre for Resource Studies. This paper examines the geological aspects of mining productivity or, in other words, the effect of the mineral resource input on productivity change in the mining sector. The relationship between real exploration expenditures and the value of economic deposits discovered as the result of that investment is appraised. This study is based on a presentation that Dr. Mackenzie made to the CRS Policy Discussion Seminar 'Mining Productivity' in March 1984 and will be published as a CRS working paper.

Effects of Location on Mine Development Potential: Nova Scotia's Competitive Position in Canada: Dallas W. Davis, Brian W. Mackenzie, Michel L. Bilodeau, Centre for Resource Studies. This project, funded by the Nova Scotia Department of Mines and Energy, under sponsorship of the Canada-Nova Scotia mineral development agreement, examines regional economic differences and variations in taxation policies which influence the economics of mining. For this purpose, two hypothetical mine development opportunities – a medium-size open pit tungsten deposit and a small underground gold deposit – are evaluated initially in Nova Scotia, and then in a number of other mining regions and provinces. Results are analyzed with respect to the effects of location. The study is intended to promote a better understanding of economic exploration targets and an improved basis for exploration planning within the province. The final report was submitted in May 1985.

Research in Progress

Foreign Direct Investment by the Canadian Nonferrous Metal Industry: Elizabeth Urquhart, independent researcher. This is a systematic study of direct investments made abroad by Canadian nonferrous mining companies. It will include both stocks and flows of all foreign direct investments related to mining, such as exploration, mining, refining, processing and marketing, as well as investments in other sectors such as manufacturing.

Management in the Mineral Industries: Peter Richardson, School of Business, Queen's University. This study will look at the applicability of modern management concepts and practices to management in the resource industries. This background research may lead to a CRS seminar or a more detailed research project.

Mineral Policy Update 1985: Margot Wojciechowski, Centre for Resource Studies. The fifth in this annual series, this study will document the mineral policy and program changes that have been made during 1985 by the federal government, the Territories, and all provinces except Prince Edward Island.

Quantitative Assessment of the Economic Impact of Mining on the Canadian Economy: David L. Anderson, Centre for Resource Studies. This is largely a statistical study which will draw on existing data sources (primarily computer data bases) to demonstrate the impact of mining on Canada's economy, especially in comparison with other resource industries such as forestry and petroleum.

Size and Grade Characteristics of Base Metal Deposits in Canada: Duc Le, former graduate student, Department of Geological Sciences, Queen's University, and Brian Mackenzie, Centre for Resource Studies. This study examines the tonnage and gross in-situ value per tonne characteristics of base metal deposits, utilizing data for 275 deposits discovered in Canada to 1977. The actual distributions of these endowment characteristics, their relationship to the lognormal statistical model, and the relationship between deposit size and grade are analyzed for various types of base metal deposit. Illustrations are provided of how the results can be applied to government policy and corporate planning issues. A summary paper was presented at the CIM annual meeting in April 1984. The study is being prepared for publication as a CRS technical paper.

Canadian Interests and U.S. Mineral Policy: David Haglund, Department of Political Studies, Queen's University. This study, initiated through a grant-in-aid of research, will identify what policies the United States has been, or might be, considering for the purposes of reducing its vulnerability to mineral supply disruptions, and will examine the degree to which such policies do or might affect Canadian mineral interests.

An Analysis of Japanese Metallurgical Coal Sourcing Policies: The Canadian and Australian Experience: David Anderson, Centre for Resource Studies. This study assesses the impact of the coordinated purchasing policies of the Japanese steel mills on metallurgical coal producers in Canada and Australia. Special attention is given to describing and evaluating the Australian response to this issue.

Australian and Canadian Export Coal: A Policy Analysis of Relative Competitiveness: David Anderson, Centre for Resource Studies; and Donald W. Barnett, Macquarie University, Australia. The objective of this study is to assess the relative competitiveness of Australian and Canadian export coals in the Pacific Rim market. The analysis focusses on the domestic cost structure of each industry with special attention given to operating costs, non-profit and profit-based taxes, domestic transportation levies; and infrastructure financing arrangements.

Eldorado and Public Policy: Maureen Matthews, independent researcher. This study is a reworking of the author's masters thesis on the public accountability of Eldorado Nuclear Limited. For CRS purposes Ms. Matthews will focus on the role of the Crown-owned company as an instrument of public policy, and the related issues of public accountability and commercial competitiveness.

International Mineral Consultative Organizations: W. Keith Buck, Centre for Resource Studies. As the Centre's Distinguished Visitor, Mr. Buck has begun a study of international consultative arrangements *vis-à-vis* their applicability to the Canadian mining industry. He will draw on his background as Secretary General of the Lead/Zinc Study Group and his participation in other international consultative organizations.

Competitive Position of Canadian Minerals in International Markets: Brian Mackenzie and David Green, Centre for Resource Studies. Changes in the international position of Canada's mineral industry are linked to changes in the general rate of inflation and in the exchange rates between producing and consuming nations. The study examines competitive trends for Canada's eight leading mineral exports relative to the major producing and consuming nations during the 1963-84 period.

The Contribution of Mine Infrastructure to Economic Development in North Australia: Ciaran O'Faircheallaigh, Australian National University. The objective of this research is to establish the extent to which infrastructure provided to assist mining developments in North Australia has contributed to more broadly-based economic growth. This study has potential policy implications for remote regions in Canada.

Mining and the Macdonald Commission: The State of Canadian Mining in the Mid-1980s: David Yudelman, Centre for Resource Studies. This study examines the mining industry's responses and representations to the MacDonald Royal Commission on the economy. It will provide a perspective on the Canadian mining industry in the 1980s from the vantage point of the producers.

Business-Government Relations in Mining: David Yudelman, Centre for Resource Studies. This study will be a review of the literature on the relationship between business and government, with a primary focus on mining.

The South African Model of the Mining-Government Relationship: David Yudelman, Centre for Resource Studies. This study will examine the relationship of government and the mining industry in South Africa. Special reference will be made to the relevance (if any) for Canada of the South African model.

Exploration of the Korean Market for Canadian Minerals: Yul Kwon, University of Regina. In this study, Dr. Kwon will investigate the trade opportunities available to Canada in the rapidly expanding industrial economy of South Korea. With the prospect of static markets for Canadian minerals in the USA, EEC, and Japan, Canada must investigate new trade opportunities. It is expected that South Korea, whose economy has grown at a rate of 8 percent per annum over the last 20 years, will be the 'Japan' of the future.

The USSR's Mineral Policy and its Implications for Canada: Miron Rezun, Queen's University. This study will examine that extent to which Canadian mineral interests are, or could be, affected either negatively or positively by Soviet mineral policy. Secondly, it will outline plans, policies, or proposals the USSR has been, or might be, considering in a possible 'resource war' that could affect Canada.

Economic Comparison of Mineral Supply Potential in Northern and Southern Canada: Leo Verleun and Brian Mackenzie, Centre for Resource Studies. This study extends Leo Verleun's master's thesis in which he compares endowment and locational characteristics of exploration and mining in the northern territories with those of the more-accessible southern provinces.

New Publications

The following new publications arising from the CRS research and seminar programs were released during 1984-85.

Mineral Policy Update 1983, by Margot Wojciechowski, was published in September 1984 as the third in a series. This study summarizes the major program and policy initiatives of the federal, provincial and territorial governments of Canada in 1983 that affected the Canadian mineral industry.

Canadian Mineral Policy Formulation: A Case Study in the Adversarial Process, by David Yudelman, published in June 1984. This study examines EMR's *Mineral Policy: A Discussion Paper* and the mining industry's reaction to it. The study is of interest both to those concerned with the state of the Canadian mineral industry and to those in Canadian policy formulation.

Productivity and Price: The Case of Gold Mining in Ontario, by Alan G. Green, published in December 1984. This paper deals with lode gold mine production in Ontario from the mid-1960s to the present. Dr. Green surveys the market for gold and its price performance over the recent past, looks at productivity performance, and sets out some conclusions about factors which have influenced productivity in this industry.

National Resources and International Bargaining Power: Canada's Mineral Policy Options, by Patrick James Caragata, published in October 1984. This study describes the evolution of mineral resource diplomacy and its instruments such as cartels, commodity agreements and study groups, and evaluates the related opportunities and constraints facing the Canadian mineral sector. It is hoped that the work will provide a useful background of information on the subject of resource diplomacy and national trade initiatives, and will also provide guidance to both public and corporate policy makers in their endeavours to maximize the benefits to Canadians of Canada's mineral endowment.

Federal Policy and the Role of Public Enterprise in the Mining Sector, by Michael J. Prince and G. Bruce Doern, published August 1984. This is a companion piece for a larger study on *The Origins of Public Enterprise in the Mineral Sector: Three Provincial Case Studies* (see below). The paper explores recent federal policy in relation to the likelihood of further or altered federal involvement in the mineral sector through the aegis of public enterprise.

Mining Communities: Hard Lessons for the Future, edited by Margot J. Wojciechowski, published June 1984. This volume contains the proceedings of the twelfth CRS Policy Discussion Seminar, sponsored by the Centre for Resource Studies. Following on the recommendations of the Report of the Task Force on Mining Communities (September 1982), the Centre for Resource Studies organized a policy discussion seminar which drew on some of the hard lessons that have been learned in the course of mine closures, and looked at some of the new planning approaches that are being designed to avoid single-industry dependence and to share financial risks. It is hoped that the deliberations will help communities presently facing difficulties, and lead to improvements in both the handling of cut-backs and closures for existing communities and the planning of future projects to avoid such hardships.

Native Participation in Mineral Development Activities, edited by Margot J. Wojciechowski, published August 1984. This volume contains the proceedings of a national conference on Native Participation in Mineral Development Activities, held in Kingston, Ontario, 27-29 March 1984. The conference was sponsored by the federal departments of Energy, Mines and Resources (EMR) and Indian Affairs and Northern Development (DIAND), with additional funding from the Canada Employment and Immigration Commission. The objectives of the conference were to undertake a practical examination of alternative approaches to native participation in mineral development activities and to establish a common background of understanding among participants on such matters as the various attitudes and practices of native peoples towards mineral activities, and the practices of companies and governments regarding mineral development.

Mining Productivity, edited by Margot J. Wojciechowski, published February 1985. This volume contains the proceedings of the 13th CRS Policy Discussion Seminar, held at Queen's University in March 1984. The subject of productivity is of vital importance to the long-term viability of the Canadian mineral industry, in the face of growing competition from low-cost producers throughout the world. Papers were presented on the problems involved in productivity measurement, and on various industry and government initiatives designed to improve productivity in the Canadian mining industry.

The Origins of Public Enterprise in the Canadian Mineral Sector: Three Provincial Case Studies, by Michael J. Prince and G. Bruce Doern, published February 1985. In this study, the authors examine the concepts and issues underlying the establishment of public-sector participation in mineral enterprises in Canada, and in that context look at the origins of public enterprises in three provinces: the B.C. Northeast Coal Development Office, the Saskatchewan Mining Development Corporation and the Potash Corporation of Saskatchewan, and Novaco in Nova Scotia. A bibliography of literature on public enterprise in the Canadian mineral sector is included.

A Climate for Change: Alternatives for the Central and Eastern Arctic, by Katherine A. Graham, M.P. Sharon Brown, Anne B. McAllister, Margot J. Wojciechowski, published September 1984. As the final report of the Eastern Arctic Study, *A Climate for Change* focuses its attention on twelve general alternatives for the political development of the central and eastern Arctic and the settlement of land claims, assessing each alternative to determine how it might avoid some of the difficulties associated with the current approach to industrial development and identifying its other strengths and weaknesses.

Eastern Arctic Study Case Study Series: Beaufort Sea Oil and Gas Development, by M.P. Sharon Brown, Katherine A. Graham, and Margot J. Wojciechowski, published April 1985. This case study examines exploration for petroleum resources in the Beaufort Sea since the late 1960s. It focuses on the interaction among the three major proponents of development of the area's hydrocarbon resources (Dome Petroleum, Esso Resources Canada Limited and Gulf Canada Resources Inc.), the federal and territorial governments, and communities in the region.

Eastern Arctic Study Case Study Series: James Bay Settlement, by Anne B. McAllister, published April 1985. This case study deals with the only comprehensive native land claim settlement negotiated up to the end of 1982 in Canada, the James Bay and Northern Quebec Agreement, signed on November 11, 1975. The parties to the Agreement were the Government of Canada, the Government of Quebec and the Cree and Inuit people of the James Bay Territory.

Mineral Technology Transfer: Evaluation of the CANMET Pit Slope Project, by Brian W. Mackenzie and Rimas Pakalnis, published March 1985. The study comprises a technical and economic assessment of an important federal government research and development initiative. Mine visits and interviews yielded 20 quantifiable cases of actual advances in pit slope technology with realized benefits attributable in part to the pit slope project. These ascribed benefits are scaled up to the mineral sector level. Around this quantifiable core benefit, a broader sphere of less tangible benefits attributable to the project are documented. Also, the project, *Pit Slope Manual*, and technology transfer mechanisms are critically evaluated, generalizing from a large number and wide range of interview and questionnaire responses. The lessons learned from the CANMET pit slope project provide an improved basis for directing mining research along lines which are most beneficial to the productive capability and competitiveness of the mineral sector in Canada.

A complete list of CRS publications appears at the end of this report.

Publications Outside CRS by CRS Researchers

David Yudelman, *The Emergence of Modern South Africa* (Cape Town: David Philip, 1984). Previously published in the USA.

David Yudelman, 'Canadian Mineral Policy Debated: Industry Reaction to a Major Federal Initiative', *Resources Policy*, Guildford, England, volume 10, no. 4, December 1984.

David Yudelman, *Political Risk in Extractive Industries, Vol II: A Case Study of South Africa* (New York: Frost and Sullivan, 1985).

Brian Mackenzie and Michel Bilodeau, *Economics of Mineral Exploration in Australia: Guidelines for Corporate Planning and Government Policy* (Adelaide: Australian Mineral Foundation, 1984), 171 pp.

David Anderson, 'Government Policies and Programs in Saskatchewan' in *The Dynamics of Government Programs for Urban Indians in the Prairie Provinces*, edited by R. Breton and G. Grant, Institute for Research on Public Policy, 1984, pp. 203-319.

David Anderson, 'Mining Taxation and Royalties in Saskatchewan' in *Mining Law in Canada*, edited by Richard Bartlett, Law Society of Saskatchewan, 1985, pp. 193-220.

David Anderson (with Donald Barnett), 'A Quantitative Analysis of the Taxation of Uranium Mines in Australia and Canada' in *Materials and Society*, 8(1), 1984, pp. 13-28.

David Anderson, *The Saskatchewan Potash Industry: Alternative Strategies for Future Development*, Economic Council of Canada, Discussion Paper No. 264.

David Anderson, book review of *The Politics of Canadian Public Policy*, edited by M.M. Atkinson and M.A. Chandler (University of Toronto Press), published in *Canadian Public Administration*, vol. 27, no. 2, 1984, pp. 306-307.

Presentations Made by CRS Researchers and Associates

(Based on CRS-related work)

David Anderson:

'The Australian Joint Venture and Naturalizing Program', a paper presented to Transnational Business Activity in Canada: Issues for Public Policy, Science Council of Canada (Ottawa, October 1984)

'Prospects for Potash and Uranium Development in Western Canada', a paper presented to the Western Economic Transition Conference, University of Alberta (Edmonton, November 1984)

Alan Green:

'Aspects of Changing Productivity in Mining', a paper presented to the CIM 3rd Mineral Economics Committee Symposium (Toronto, November 1984)

Brian Mackenzie:

'Decision-Making Methods for the Mineral Industry', a two-week workshop for the Australian Mineral Foundation (Adelaide, May 1984)

'Economic Guidelines for Exploration Planning',
- two-week seminar for Departamento Nacional da Producao (Brazil, July 1984)
- one-week seminar for Department of Geological Sciences, Queen's University, (Kingston, December 1984)
- seven-day seminar for State Mining Property Commission (Sweden, April 1985)

'Economic Evaluation Techniques and Mineral Sector Applications', a two-week seminar for the University of Iron and Steel Technology (China, August 1984)

Peter Richardson:

'Technology Strategies in Mineral Industry Corporations', a paper presented to the CIM Annual Meeting (Vancouver, April 1985)

Margot Wojciechowski:

'Productivity Measurement', a lecture for the Mine Maintenance Seminar organized by the Department of Mining Engineering, Queen's University (Kingston, November 1984)

'Information Sources for Native Participation in Mining', a lecture given at the conference called by Council of Yukon Indians, organized by DIAND (Whitehorse, December 1984)

David Yudelman:

'Financing Strategies in the Mining Industry', an introductory address given to the Insight Conference (Toronto, December 1984)

'Political Risk in Extractive Industries: The South African Case Study', a paper presented to a conference organized by Frost & Sullivan (New York, January 1985).

CRS Policy Discussion Seminars

The CRS Policy Discussion Seminars are designed to bring together senior individuals from federal and provincial governments, corporations, universities, trade unions, and other interested groups to discuss current mineral policy issues. The informal atmosphere is conducive to the free and constructive exchange of views. In a typical two-day session, six or eight speakers present background information and views on the issue. Subsequent discussion in small groups and open sessions allows the participants to develop a mutual understanding of the problem and of other viewpoints, and to discuss potential solutions. The proceedings are published, including the papers and some analysis and conclusions.

Mining Taxation

In November 1984, a policy discussion seminar was held on the subject of 'Taxation Policies in the Canadian Mineral Industry'. In the face of continuing depressed markets and prices for most minerals, and the pressures of international competition, there is still concern that firms in the Canadian mineral industries are hampered by the total tax burden they bear, as well as by the structure of the tax system in Canada. At present, there are a variety of studies under way in government, industry and the universities in Canada on these issues. The seminar presented the findings of some of these studies, and debated their implications for future directions in tax policy. Despite the present mood of moderation, there are fears that, when the mineral industries once again enjoy a period of prosperity, governments may introduce additional taxes which may inhibit future recovery and growth. The following papers were presented:

A View of the Impact of Past Tax Changes on Canadian Mining, Gonzague Langlois, Quebec Metal Mining Association;
Aspects of Federal Tax Policy, Derek Williams, Taxation Policy, Department of Finance;
The Total Tax Burden of the Mining Industry, Tex Enemark, The Mining Association of British Columbia;
Taxation and Economic Development in British Columbia, Philip Halkett, Dept. of Finance, Government of B.C.;
Provincial and International Tax Comparisons in the Mineral Industries, Roberta Albert, Tax Policy Analysis Division, Energy, Mines and Resources Canada;
An Industry View of Federal-Provincial Tax Issues, Keith Service, Placer Development, and Chairman, MAC Tax Committee;
Tax Incentives for Junior Mining Companies, Keith O'Brien, Prospectors and Developers Association and Inco Limited;
Effective Taxation in the Canadian Mining Industry, Robin Boadway and Jack Mintz, Department of Economics, Queen's University.

CRS Perspectives

Four issues of CRS *Perspectives* were published during the current year. *Perspectives* is an occasional bulletin edited by David Yudelman that contains comment about the Canadian mineral industry, reviews, and news of CRS activities and publications. *Perspectives* is sent to the entire CRS mailing list of about 4,500 individuals and institutions interested in mineral policy issues.

Various aspects of mineral policy were discussed in the four issues of *Perspectives* issued in 1984-85. The June 1984 issue featured an article by Peter Richardson of Queen's School of Business entitled 'Evaluating mining management' and a brief summation of the Native Participation Conference by Katherine Graham, who helped organize this event. The articles in the October issue focused on 'Issues Management and Mining' (Jim Cooney, Placer Development Limited) and Mining Productivity (Margot Wojciechowski, Centre for Resource Studies). Another article by Margot Wojciechowski on product development for metals appeared in the December issue, which featured a piece by Ciaran O'Faircheallaigh of the Australian National University entitled, 'Controlling foreign mining companies'. The March 1985 issue featured an interview with C. George Miller, Managing Director of The Mining Association of Canada and former Assistant Deputy Minister of the Mineral Policy Sector at Energy, Mines and Resources Canada.

Financial Arrangements

The Centre disbursed $145,426 on administrative activities and $328,060 on research activities during the year.

Continuing financial support is received from The Mining Association of Canada and Energy, Mines and Resources Canada. Funding from The Mining Association of Canada was increased as of 1 October 1983, from its previous level of $125,000 per year ($50,000 for administration and $75,000 for research) to $187,500 per year ($75,000 for administration and $112,500 for research). This funding was matched by Energy, Mines and Resources Canada as of 1 April 1984. A total of $40,007 was recovered from the sale of publications and seminar registration fees.

The Centre also seeks to serve the research needs of other agencies. In the current year, research support was received in the amount of $37,856 from agencies other than the Centre's permanent sponsors.

The Board of Directors

The Board consists of sixteen members. The Executive Director and the Advisory Council Chairman are ex-officio members. Of the remainder, four are appointed by The Mining Association of Canada, three by Energy, Mines and Resources Canada, and seven by the Principal of Queen's University. The Chairman is Dr. C. George Miller, Managing Director, The Mining Association of Canada and formerly Assistant Deputy Minister, Mineral Policy, at Energy, Mines and Resources Canada. The chairman of the Research Advisory Committee has observer status at Board meetings.

The Board met twice during the year; the spring meeting was held 2 May in Kingston and the fall meeting took place 1 November in Toronto. On these occasions, the Board discussed a number of ongoing and potential research themes, as well as the recommendations of the Advisory Council.

Members of the Board who retired during the year were Mr. J.L. Bonus, Dr. J.W. Berry, Mr. H.T. Fargey and Mr. J.L. McPherson. New appointments for 1985-86 were Mr. William James (MAC) and Dr. H. Jamieson (Queen's). Dr. R.W. Boadway (Queen's) and Dr. C.G. Miller (MAC) were reappointed.

Members of the 1984-85 Board of Directors were as follows:

D.L. Anderson
Centre for Resource Studies
J. Beausoleil
Department of Finance, Ottawa
J.W. Berry
Queen's University
R.W. Boadway
Queen's University
J.L. Bonus
The Mining Association of Canada
P. Calder
Queen's University
W. Curlook
Inco Limited
D.W. Davis (Advisory Council Chairman 1984)
Mining Consultant
H.T. Fargey
Cominco Ltd.
G.J. Hodge
Queen's University
W. James
Falconbridge Limited
W.G. Jeffery
Energy, Mines and Resources Canada
R.D. Hutchinson
Energy, Mines and Resources Canada
R.J. Keyes (observer)
Energy, Mines and Resources Canada
B.W. Mackenzie
Centre for Resource Studies
P.C. MacCulloch
BP Selco Inc.
A. Manson
Queen's University
J.L. McPherson
Placer Development Limited
C.G. Miller
The Mining Association of Canada
D.G. Sinclair
Queen's University
R.J. Uffen
Queen's University
D.J. Worth (Advisory Council Chairman 1985)
Canadian Imperial Bank of Commerce

Advisory Groups

The Advisory Council

The Advisory Council currently has a membership of fifty-four. All researchers associated with the work of the Centre are appointed to membership for the duration of the research or a minimum of one year. Other members, representing not only governments, industry, and the professions, but also such interested groups as trade unions, consumers, and native peoples, are appointed for a three-year term. The functions of the Council are to advise the Board, primarily on the research program, and to act as advisors to the Centre's staff.

The Council's annual meeting was held on 3 May 1984, under the chairmanship of Mr. Dallas Davis. Reports on the Centre's ongoing activities were received and discussed, along with presentations by a number of CRS and external researchers. Mr. Don Worth was chosen as chairman of the Council for 1985.

Advisory Council members for 1984-85 were as follows:

D.L. Anderson
Centre for Resource Studies
*P. Andrews**
Energy, Mines and Resources Canada
W.I. Barbour
Noranda Mines Limited
*F.C. Basham**
Ministry of Energy, Mines & Petroleum Resources, Victoria
J.C. Beal
Queen's University
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Personnel

Members of the Centre staff coordinate the program of external research, carry out studies in-house, edit and produce the Centre's publications, organize seminars and meetings, and provide staff services to the Board and Advisory Council. Other related professional activities include participation in conferences and seminars, speaking engagements and teaching, publication of professional writings, and consultation with other researchers.

During 1984-85, the staff and associates of the Centre were as follows:

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In addition, many others have assisted in the work of the Centre at various times. The contributions of Leo Verleun and Mary Louise McAllister in particular are gratefully acknowledged.

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Following is a complete list of all CRS publications. Publications that are out of print (marked *) can be ordered from Micromedia Limited. All other publications can be ordered from:

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Monographs and Collections

Conflict and its Resolution in the Administration of Mineral Resources in Canada, by R.M. Burns; 62 pages, 11 tables, 1976.

The Impact of the Mining Industries on the Canadian Economy, by R.W. Boadway and J.M. Treddenick; 116 pages, 15 tables, 1977.

The Transportation Impact of the Canadian Mining Industry, by A.I. Wallace; 154 pages, 17 tables, 1977.

Human Resources in Canadian Mining: A Preliminary Analysis, by J.A. MacMillan, G.S. Gislason, and S. Lyon; 174 pages, 48 tables, 1977.

Health and Safety in the Canadian Mining Industry, by G.W. Gibbs and P. Pintus; 248 pages, 58 tables, 1978.

The Canadian Nonferrous Metals Industry: An Industrial Organization Study, by E. Urquhart; 158 pages, 18 tables, 1978.

Economic Impacts and Linkages of the Canadian Mining Industry, by P.E. Nickel, *et al.*; 140 pages, 31 tables, 1978.

Environmental Impact of Mining in Canada, by E.A. Ripley, *et al.*, 274 pages, 45 tables, 1978, reprinted 1982.

Effects of Taxation on Base Metal Mining in Canada, by B.W. Mackenzie and M.L. Bilodeau; 188 pages, 29 pages, 29 tables, 1979.

Gold: The World Industry and Canadian Corporate Strategy, by E. Cousineau and P.R. Richardson, 192 pages, 32 tables, 1980.

The Impact of Policy Change on Decisions in the Mineral Industry: The Case of Exploration in Manitoba, 1969-77, by B.E. Owen and W.J. Kops; 116 pages, 8 tables, 1980. (M-11, $9.00)

The Role of Mineral Taxation in Industry/Government Conflict: The Case of the Saskatchewan Potash Reserve Tax, by David L. Anderson; 135 pages, 41 tables, 2 illustrations, 1981.

Profitability in the Canadian Mineral Industry, by Charles H. Pye; 178 pages, 42 tables, 12 illustrations, 1981.

Foreign Investment Control in the Canadian Mineral Sector: Lessons from the Australian Experience, by David L. Anderson; 180 pages, 22 tables, 1983.

Financing Canadian Mining in the Eighties: Strategies for Action, edited by David Yudelman; 240 pages, with papers by B. Bradly, A. Dorland, J. Erola, P. Gillin, P. Glenshaw, S. Greenwald, B. Kalymon, P. MacCulloch, B. Mackenzie, K. Murphy, A. Powis, R. Sultan, and D. Yudelman, 1984.

National Resources and International Bargaining Power: Canada's Mineral Policy Options, by Patrick James Caragata; 190 pages, 1984.

Proceedings

No. 1 *Rate-of-Return Taxation of Minerals*, edited by P.R. Richardson and N.D. Olewiler, with papers by B.W. Mackenzie and M.L. Bilodeau, P.M.T. White, N.D. Olewiler, J.T. Cawley, and E.P. Gush; 109 pages, 1978.

No. 2 *International Competition and the Canadian Mineral Industries*, edited by C.H. Pye and M.J. Wojciechowski, with papers by H.C. Armstrong, H.T. Fargey, C.G. Miller, N.D. Olewiler and P.R. Richardson, D. Perlstein, and K.C. Hendrick; 109 pages, 1978.

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No. 6 *Junior Mining in Canada: The Problem of Investment and Securing Fair Returns*, edited by M.J. Wojciechowski, with papers by A.J. Freyman, B.A. Kalymon, J.D. Mason, D.W. Scrim, E.H. Neave and P.R. Richardson, and E.G. Thompson; 101 pages, 1979.

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No. 15 *Native Participation in Mineral Development Activities*, edited by M.J. Wojciechowski, with papers by A. Clark and M. Lalande, K.A. Graham, B.W. Mackenzie, C.D. Hunt, J.-L. Blais, F.R. Joubin, and E. Laliberté; 150 pp, 1984.

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Working Papers

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No. 33 *The Origins of Public Enterprise in the Canadian Mineral Sector: Three Provincial Case Studies*, by M.J. Prince and G.B. Doern, 143 pp, 1984.

Window Papers

Window papers are a special series of short papers with limited distribution commenting on current issues in mineral resource policy. They represent the results of independent research sponsored by CRS, and are offered for information and discussion, in an attempt to encourage feedback and further research.

Effects of the November 16, 1978 Budget on Base Metal Mining in Canada: A Challenge for the Provinces and Some Future Concerns, by Brian W. Mackenzie and Michel L. Bilodeau

Effects of Recent Mining Taxation Changes in Quebec, Ontario, and Manitoba, by Brian W. Mackenzie and Michel L. Bilodeau

Financing of Junior Mining in Canada, Summary of the Fifth CRS Policy Discussion Seminar, March 28-30, 1979

New Mining Ventures: The Case for Preserving After-Tax Financing, by William T. Cannon

The Proposed Ontario Aggregates Act: Discussion, Evaluation and Recommendations, by John Swaigen and J.F. Castrilli

Parametres Economiques de l'Exploration Minerale au Quebec: Vers la Planification et l'Elaboration d'un Politique Minerale, par M.L. Bilodeau et B.W. Mackenzie

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Mineral Policy Update

Mineral Policy Update 1981, by Margot J. Wojciechowski and Cyd E. McMurray; 85 pages, 1983.

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Mineral Policy Update 1983, by Margot J. Wojciechowski; 88 pp, 1984.

Eastern Arctic Study

A Climate for Change: Alternatives for the Central and Eastern Arctic, by K.A. Graham, M.P.S. Brown, A.B. McAllister, M.J. Wojciechowski, Final Report of the Eastern Arctic Study, 184 pages, 1984.

The Inuit Land Claim, Constitutional Development, and Local Government Reform in the Northwest Territories: An Overview, by Katherine A. Graham and Anne B. McAllister, 50 pages, 1981.

Industrial Development in the Eastern Arctic Study Area: A Preliminary Overview, by C. George Miller, 31 pages, 1981.

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Eastern Arctic Study Annotated Bibliography, by M.P. Sharon Brown, 68 pages, 1984.

Eastern Arctic Study Case Study Series: James Bay Settlement, by Anne B. McAllister, 61 pages, 1985.

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